

Cerceris barbifera, Bisch.

Cerceris barbifera, Bisch. Deutsch. Zentr. Afrik. Exp. iii., Zool. i. p. 222 (1911). ♀.

? *Cerceris bagandarum*, Turn. Ann. & Mag. Nat. Hist. (9) ii. p. 465 (1918). ♂ ♀.

I think these are identical, but the median lobe of the clypeus in *bagandarum* is much broader and shorter than in Bischoff's figure, which also omits the large triangular tooth on the inner side of the mandibles. These differences may be due to inaccuracies in the figure, as otherwise the description of *barbifera* agrees well with *bagandarum*. As I have previously suggested, I look on this and also on *C. sodalis*, Turn., as subspecies of *C. diodonta*, Schlett.

PROCEEDINGS OF LEARNED SOCIETIES.

GEOLOGICAL SOCIETY.

December 18th, 1918.—Mr. G. W. Lamplugh, F.R.S.,
President, in the Chair.

The following communication was read:—

'On a Bed of Interglacial Loess and some Pre-Glacial Fresh-water Clays on the Durham Coast.' By Charles Taylor Trechmann, D.Sc., F.G.S.

A few years ago the Author described a bed of Scandinavian drift that was found filling up a small pre-Glacial valley-like depression at Warren-House Gill on the Durham coast. This section and others north and south of it have been kept under observation at different times, and several new features have been noticed as the high tides and other agencies exposed parts of the coast.

Towards the southern end of the old pre-Glacial valley at Warren-House Gill a bed of material, varying from 4 to 12 feet in thickness, was found overlying the Magnesian Limestone and also the Scandinavian drift. This material has been carefully examined chemically and microscopically, and proves to be identical in chemical and physical characters with a sample of the true Continental loess. It is light brown or fawn in colour, very porous and extremely finely divided, and is devoid of plasticity. Towards the base, where it has not been disturbed since it was laid down, it contains a number of rounded and elongated, often very hard, calcareous concretions. In the cliff-section it shows little or no trace of bedding, but tends to break down along vertical clefts and cracks. It passes upwards into a few feet of material that consists of loess which has been partly redeposited by water, and is mixed with sand, gravel, and other material derived from the Scandinavian drift.

The bed of loess and redeposited loess-like drift has suffered

much decalcification and weathering; near its surface there was a large boulder of Norwegian titaniferous syenite which was superficially rotted, and decomposed to a considerable depth. Smaller granitic erratics in the redeposited loess are generally very much rotted. The limestone rubble and stones beneath the loess are strongly calcareted, apparently by material leached out of the loess. In a fissure beneath the loess some mammalian bones were collected, including astragali of two species of *Cervus*. It is argued that the formation and subsequent decalcification of the loess deposit lying upon the Scandinavian drift indicates an Interglacial lapse of considerable duration, as great as that which Continental geologists call an Interglacial Period, before the overlying English and Scottish drift was deposited.

About 2 miles south of the Scandinavian drift-bed several fissures occur in the Magnesian Limestone cliffs and on the foreshore, filled with various materials that were transported in front of the earliest ice-sheet that advanced upon this part of the coast. The Author has already recorded the occurrence in these fissures of Upper Permian red and grey marls and dolomites with clay and peaty trees. Continued examination of two of the fissures where they are exposed between tide-marks on the shore, resulted in the finding of a quantity of freshwater mollusca, ostracoda, and fish-remains. Some mammalian remains also occurred, including those of an elephant (probably *Elephas meridionalis*) and of a vole (*Mimomys*).

Vegetable matter has been washed from various parts of the clay. A large number of seeds came from a single patch of clay, and prove to be of Teglial age: they seem to represent a pre-Glacial flora, half of the species of which are either exotic or extinct. Seeds from other parts of the deposit appear to indicate a later horizon, and contain mainly living forms.

The deposit is a mixed one, and seems to have belonged to a series of late Pliocene and early Pleistocene beds that occupied part of the present area of the North Sea and were torn up by the advancing ice-sheet, like a great glacial erratic, and thrust into the fissures.

The fact that the Scandinavian drift in Durham contains only stones of Scandinavian origin has been confirmed, and the marine Arctic shells that occur in it were further collected and a few additions to the faunal list were made. The most interesting of these is *Cyrtodaria siliqua* Spengler, an American shell which has been recorded hitherto in Great Britain only from the Caithness Boulder Clays.

All the deposits described above are overlain and overridden by the main mass of local Cheviot and Northern drift that caps the cliffs of the Durham coast.

A suggested correlation of the Durham sequence with the European drifts is attempted, and it is concluded that the fringe of the Scandinavian ice-cap that reached the Durham coast probably corresponds with that of the second and greatest glaciation

of Scandinavia, which some Continental geologists correlate with the Riss Stage of the Alps.

In that case, the main local drift of the north-eastern coast falls into the third and last Glacial Period of Northern Europe. The evidence for Interglacial lapses in the local drifts is very inconclusive.

All the observed features seem to point to the fact that the Scandinavian ice-sheet advanced on the east coast of England in the same way as it invaded Northern Europe round the southern shores of the Baltic, and gave rise to analogous climatic conditions leading to the formation of loess, a fragment of which is found protected from the erosive action of the later local glacialiation in a small hollow on the Durham coast.

June 4th, 1919.—Mr. G. W. Lamplugh, F.R.S.,
President, in the Chair.

The following communication was read:—

‘On the Dentition of the Petalodont Shark, *Climaxodus*.’
By Arthur Smith Woodward, LL.D., F.R.S., P.L.S., F.G.S.

The author describes the nearly complete dentition of a new species of *Climaxodus* from the Calcareous Sandstone of Calder-side, near East Kilbride (Lanarkshire), now in the Royal Scottish Museum, Edinburgh. Nearly all the teeth are borne on the symphysis of the jaw, only the outer paired longitudinal series extending a little farther back over the rami. There are from three to five longitudinal series, each of five or six teeth of the ordinary *Climaxodus*-type, covering the greater part of the symphysis; and the flanking paired series, which extends farther back, comprises more depressed teeth, in which the cutting-edge forms a low blunt ridge. The two jaws are nearly similar; but, as in *Janassa*, the upper seems to have been slightly wider than the lower jaw. The teeth rapidly increase in size backwards, also as in *Janassa*, but they must have been all retained in the mouth throughout life; while in *Janassa* only a single transverse row would be in function at one time, the older teeth being thrust beneath to form a supporting base. *Climaxodus* and *Janassa* are thus two distinct genera. These Petalodonts are especially noteworthy among the Elasmobranchii, because during the greater part of the life of each individual there cannot have been more than six or eight teeth in succession, a condition remarkably different from that in all ordinary sharks and skates in which the successional teeth are always very numerous and rapidly replaced. The same limited tooth-succession is to be observed in the Carboniferous *Cochliodontidae*, and perhaps also in the contemporaneous *Psammodontidae*. Most of the teeth of *Climaxodus* are also interesting as showing a restricted area of highly vascular dentine much resembling a tritor in the dental plate of an ordinary Chimæroid. This character in Elasmobranch teeth which are peculiar for their slow and scanty succession, may have some special significance in connexion with the origin of the Chimæroids.